

STATE OF CALIFORNIA
Budget Change Proposal - Cover Sheet
DF-46 (REV 07/17)

Fiscal Year 2018-19	Business Unit 3885	Department Delta Stewardship Council	Priority No. 01
Budget Request Name 3885-001-BCP-2018-GB		Program 3370	Subprogram

Budget Request Description
Critical Delta Science Investigation Enhancement

Budget Request Summary

The Delta Stewardship Council (Council) requests a total of \$2.5 million in 2018-19 and \$477,000 ongoing (including \$2 million one-time from the Environmental License Plate Fund (ELPF) and \$477,000 ongoing General Fund) to fund critical science research and staff that will support science-based management decisions and legal expertise. Specifically, the Council is seeking:

Critical Science Investigations: \$2 million in one-time funds from ELPF for the Council's Delta Science Program (Science Program) to bolster critical science investigations aimed at supporting the state's coequal goals of ensuring a reliable water supply and protecting, restoring, and enhancing the Delta ecosystem.

Adaptive Management Liaisons: \$300,000 ongoing General Fund to support the work of 3.0 senior environmental scientist (specialist) positions currently being funded on a limited-term basis (expires June 30, 2018) as adaptive management liaisons in the Science Program; and

Senior Legal Counsel: \$177,000 ongoing General Fund for 1.0 Attorney IV to provide legal support for the Council related to grants and contracts administration, and compliance with CEQA, and Public Records and Bagley-Keene Acts.

Requires Legislation <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Code Section(s) to be Added/Amended/Repealed	
Does this BCP contain information technology (IT) components? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <i>If yes, departmental Chief Information Officer must sign.</i>	Department CIO	Date

For IT requests, specify the project number, the most recent project approval document (FSR, SPR, S1BA, S2AA, S3SD, S4PRA), and the approval date.

Project No. Project Approval Document: Approval Date:

If proposal affects another department, does other department concur with proposal? ☐ Yes ☐ No
Attach comments of affected department, signed and dated by the department director or designee.

Prepared By Ryan Stanbra/Legislative and Policy Advisor	Date 12/27/17	Reviewed By Jessica Law/Chief Deputy Executive Officer	Date 12/27/17
Department Director Jessica Pearson/Executive Officer	Date 12/27/17	Agency Secretary N/A	Date

Department of Finance Use Only

Additional Review: ☐ Capital Outlay ☐ ITCU ☐ FSCU ☐ OSAE ☐ CALSTARS ☐ Dept. of Technology

PPBA Original Signed by
Amanda Martin

Date submitted to the Legislature
JAN 10 2018

Analysis of Problem

A. Budget Request Summary

The resources requested by the Council would be allocated as follows:

- Critical Science Investigations – \$2.0 million (Environmental License Plate Fund) for one year to fund the collaboratively-developed 2017-2021 Delta Science Action Agenda (SAA) and provide decision-makers with relevant and objective information to further the coequal goals and inform a number of important projects and key initiatives such as: the Delta Smelt and Salmon Resiliency Strategies, state and federal water project operations, Proposition 1 expenditures related to storage and restoration, EcoRestore, and future Delta Plan amendments.
- Adaptive Management Liaisons – \$300,000 (General Fund) in permanent funding for 3.0 senior environmental scientist (specialist) positions that provide adaptive management expertise for a variety of programs including those required to carry out the biological opinions that affect Delta water exports, the State Water Resources Control Board's (SWRCB) flow objectives for the Delta and its tributaries, Delta water quality standards, management of key native fisheries, and restoration occurring through EcoRestore. In addition, these positions provide a statutorily mandated core function for the Council, providing early consultation for the adaptive management of covered action projects relating to ecosystem restoration and water management actions in the Delta.
- Senior Legal Counsel – \$177,000 (General Fund) in permanent funding for 1.0 Attorney IV position whose primary responsibilities would include: developing grant program guidelines; advising the Council/Science Program with respect to contract law, solicitation, agreement drafting and negotiation, and agreement management and enforcement; and on-going Bagley-Keene Act, Administrative Procedure Act (APA), CEQA, and Public Records Act advice and support.

B. Background/History

Delta Reform Act of 2009

The Delta Reform Act of 2009 (Act) created the Council with its planning, coordination, regulatory, and science programs to further the state's coequal goals of providing a more reliable water supply for California and protecting, restoring, and enhancing the Delta ecosystem in a manner that protects and enhances the unique values of the Delta as an evolving place.

The Delta is at the hub of California's water resources, with Delta diversions serving two-thirds of California's people and irrigating 4.5 million acres of farmland. The Delta's productive, yet imperiled, ecosystem also supports California's biggest salmon fishery, countless migratory waterfowl, other valued wildlife and plants, and a billion dollar outdoor recreation and tourism industry. The 500,000-acre Delta region is also of enduring agricultural, recreational, and cultural value in its own right, with productive farms, historic villages, and farmsteads.

Delta Plan

The Act directed the Council to draft a comprehensive, legally enforceable, long-term plan to guide state and local actions to further the state's coequal goals for the Delta. The Plan, adopted in 2013 and required to be reviewed for potential updates at least every five years (Water Code section 85300(c)), is comprised of recommendations and regulations consistent with the Council's oversight role and focuses on a comprehensive set of management actions that includes conservation, increased regional self-sufficiency, regional water storage (surface and below ground), conveyance, wildlife habitat, flow standards, flood protection, and protection of Delta communities and farmland.

The Council coordinates and oversees the Plan's implementation in several ways:

- *Coordinated interagency action.* The Council chairs the Delta Plan Interagency Implementation Committee (DPIIC) which is comprised of the agency secretaries, department directors, and top executives of 17 state and federal agencies to coordinate the Plan's implementation (Water Code section 85204) and further the coequal goals.
- *Science and adaptive management.* The Council, guided by the Lead Scientist, manages the DSP and houses the Interagency Ecological Program's (IEP) Lead Scientist. The DSP's mission is to provide the

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best possible, unbiased scientific information to inform water and environmental decision-making in the Delta (Water Code section 85280(d)). The Delta Independent Science Board (Delta ISB) assists the Council by providing input on the Delta Plan and overseeing and reporting on the scientific research, monitoring, and assessment programs that support adaptive management of the Delta (Water Code section 85280(a)).

- *Consistency certification for “covered actions.”* The Delta Reform Act and its implementing regulations require that state and local agencies that propose to carryout, fund, or approve significant projects in the Delta must certify their projects’ consistency with the Plan’s regulatory policies prior to implementation (Water Code section 85225).
- *Oversight and reporting.* The Plan includes performance measures that the Council uses to track agency actions and progress towards the Plan’s objectives and the coequal goals (Water Code sections 85211 and 85308(b) and (c)). The Council also holds oversight hearings and receives reports from agencies on the Plan’s implementation (Water Code section 85210(h) and (k)), and prepares white papers that include specific recommendations for implementation opportunities and challenges.

Delta Science Program (DSP)

The manner in which the numerous public agencies, organizations, and academic institutions conduct science in the Delta is changing, guided in large-part by the DSP’s strategies to encourage coordination and sharing of data and information. Established in the Delta Reform Act as part of the Council to provide objective scientific information for decision-making in the Delta, the DSP has been described by the National Research Council as the “honest broker of science in the Bay-Delta system.” The DSP fulfills this mission by identifying strategic research gaps, synthesizing and communicating scientific information to policymakers, facilitating independent scientific peer review, and coordinating with Delta agencies to promote science-based adaptive management. The Council’s Delta Science Plan (Science Plan) is built on the principle of “One Delta, One Science”, which envisions a cohesive Delta science community working together to achieve a common body of scientific knowledge. Recognizing the unique mandates of individual agencies while encouraging scientists to be more productive through interagency collaboration, the Science Plan emphasizes growing the knowledge base through research, synthesis, shared modeling, integrated monitoring, and independent peer review. Completed in 2013, the Science Plan is reviewed at least every five-years to ensure continued relevance, with the first review scheduled to occur in 2018.

Science Action Agenda (SAA)

The SAA is a four-year (2017-2021) science agenda for the Delta, which prioritizes and aligns science actions to fill gaps in knowledge, achieves key objectives in the Delta Science Plan, and builds science capacity to address current and anticipated management needs. Completed as a requirement of the Delta Science Plan, the SAA provides the “glue” for bringing the Delta science enterprise together to advance a single, collective body of scientific knowledge to support achievement of the coequal goals.

The 13 priority science actions identified in the SAA resulted from a rigorous, public process lead by the Delta Science Program’s Lead Scientist that analyzed over 550 science actions from a variety of sources including peer-reviewed scientific reports, outreach to the Bay-Delta science community, state and federal agency leaders on DPIIC, and the nationally recognized scientists that make-up the Delta ISB. To ensure that the identified actions were responsive to the needs of Delta scientists and decision-makers, each action was evaluated based on scientific merit, anticipated impact, timeliness, and the relative cost of inaction.

The SAA is one element of a three-part Delta Science Strategy that includes the Delta Science Plan and *The State of Bay-Delta Science* – a synthesis of the current scientific understanding of the Delta, emphasizing progress made on key research questions during the past decade, while identifying remaining knowledge gaps.

Adaptive Management Liaisons: Interagency Agreement

The Department of Water Resources (DWR), through a 2015 interagency agreement with the Council, agreed to provide funding for a term of three years for 3.0 senior environmental scientist (specialist) positions within the Council’s Science Program. Intended to assist with the overall integration of priority science actions in Delta management decisions particularly as it relates to the adaptive management of multi-purpose Delta flood infrastructure and ecosystem improvements, the three primary objectives of the agreement are:

- 1) Inform key implementation steps in multipurpose Delta flood infrastructure improvements and ecosystem enhancement or restoration.

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- 2) Enhance key aspects of science infrastructure, such as evaluating, developing, and implementing tools that complement the state's current investments in technology.
- 3) Synthesize best available science for decision-makers and update conceptual models used to set resource management objectives and associated performance measures as part of a robust adaptive management approach to significant projects in the Delta.

While the 3.0 senior environmental scientist (specialist) positions are part of the Council's permanent position authority, the funding of these positions is temporary and solely provided by this interagency agreement, which will run out at the conclusion of FY 17/18. However, the workload associated with these positions is ongoing, and therefore, this request includes ongoing funding for these positions.

Resource History (Dollars in Millions)

Program Budget	PY – 4 FY 12-13	PY – 3 FY 13-14	PY – 2 FY 14-15	PY – 1 FY 15-16	PY FY 16-17	CY FY 17-18
Authorized Expenditures	18.0	18.3	17.1	25.0	27.0	27.0
Actual Expenditures	13.6	13.3	15.1	18.4	20.2	--
Authorized Positions	55.5	55.5	67.5	70.5	70.5	70.5
Filled Positions	46.4	47.5	56.0	61.0	59.9	64.5
Vacancies (includes temp help)	9.1	7.8	11.5	9.5	10.6	6.0

C. State Level Considerations

The Council and the Delta Plan are central to California's intensive effort to improve management of the Delta – a region at the center of the State's water supply and natural resources challenges. The Delta Plan guides hundreds of millions in annual expenditures on water management, ecosystem restoration, emergency preparedness, and other Delta-related objectives. It is essential these endeavors be informed by the best available science, coordinated effectively, and directed toward objectives with the greatest benefit. As it relates to this request, funding research that results in objective, usable scientific information is a primary function of the Science Program and consistent with its stated mission in Water Code Section 85280 (b)(4).

California Water Action Plan

The Governor's California Water Action Plan (Water Action Plan) recommits the state to the dual goals of restoring the Delta ecosystem and ensuring a reliable water supply, while identifying the Council as a principal agency charged with furthering those goals. This proposal would advance a number of the central actions outlined in the Water Action Plan:

Action #3 - Achieving the Coequal Goals: In addition to reinforcing that the Delta Plan should be reevaluated and updated to ensure accuracy, recent Water Action Plan Implementation Reports (Implementation Reports) emphasized the importance of “enhancing the [Council's] programs to support inter-agency Delta science investigations and bolstering Delta science programs to better implement federally-mandated biological opinions...”

Action #4 - Protect and Restore Important Ecosystems: The Water Action Plan highlights the need to protect and restore the resiliency of the state's ecosystems, including the Delta's, to support native species, improve water quality, and restore natural system functions. Further, recent Implementation Reports continued to underscore the importance of ensuring that management decisions are supported by best available science.

Action #9 - Increase Operational and Regulatory Efficiency: Envisioned by the Water Action Plan as “the primary mechanism for ensuring cooperation” of State Bay-Delta actions based on best available science, the DPIIC is charged with ensuring that collaborative science informs policy and management decisions. This body of state and federal agency representatives is critical to strengthening the coordination between agencies on actions that improve the Delta ecosystem.

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Delta Smelt and Salmon Resiliency Strategies

Developed by the Natural Resources Agency, the Delta Smelt and Salmon Resiliency Strategies put forward a suite of (primarily) near-term actions to address the needs of Delta Smelt and Sacramento Valley Salmonids. Both strategies are science-driven, focused, and designed to provide resource agencies, the public, Congress, and the California Legislature with information critical to collaborative approaches to species resiliency. Additionally, given the emphasis on science-based modeling in both initiatives as a means for informing the specific recommended actions, the priority science elements outlined in this proposal would support this work, particularly in terms of habitat restoration, foodweb dynamics, and overall adaptive management.

Proposition 1: Delta Water Quality and Ecosystem Restoration Grant Program

Included in the \$7.5 billion bond, Proposition 1 allocated an average of \$8.75 million annually to the California Department of Fish and Wildlife (DFW) to administer a ten-year Delta Water Quality and Ecosystem Restoration Grant program focused on water quality, ecosystem restoration, and fish protection facilities that benefit the region. The DSP has collaborated with DFW through its first two Prop 1 solicitations to fund projects that support a number of critical science topics like pre-restoration monitoring, restoration design synthesis, and real-time decision support tool evaluation (e.g., visualization tools capable of accelerating and coordinating permitting decisions). Additional science investigation funds would further enable the DSP to leverage its resources into larger funding endeavors and further reinforce the integration of objective science into Delta actions.

D. Justification

Delta Science Investigation Funding

Due to the continually evolving landscape of the Delta, the list of science questions and the magnitude of the decisions that depend upon sound science continues to grow, while available funding to respond remains limited. As we enter an era of increasing uncertainty about climate and water supply, science conducted in collaboration among multiple institutions must be brought to bear and decisions must transcend any one particular directive or interest.

The DSP is the primary state entity focused on analyzing science in the Delta in an integrated and comprehensive manner. This requires sustained and expanded funding to fulfill its role in supporting Delta management questions. The vast majority of funding received by the DSP is distributed back out to public, private, and nonprofit organizations conducting science and research in the Delta. In addition, when necessary, the DSP has funded directed research needed by Delta managers that would otherwise not have occurred. In sum, a significant amount of science funding to support and advance ecosystem restoration in the Delta comes from the DSP.

In order to continue the DSP's essential support for improved Delta management, the Council is seeking \$2 million (one-time) from the Environmental License Plate Fund. These new funds would enable the Council to make progress on addressing a portion of the major science needs, including those identified by the interagency SAA, the Delta ISB, and the DPIIC's Delta Agency Science Workgroup, and support several major initiatives such as: the California Water Action Plan, the Delta Smelt and Salmon Resiliency Strategies, Proposition 1 expenditures, California Water Plan, and future Delta Plan amendments, including the ecosystem amendment scheduled to begin in fall 2017.

The research funding sought in this proposal would support the following:

Modernize Monitoring, Data Management, and Modeling. A 2016 letter from the Delta ISB to DWR and SWRCB calls for a comprehensive monitoring program paired with infrastructure that supports an intuitive, streamlined system for accessing data to support management actions that are key aspects of a robust science enterprise. In the Delta, this concept is especially relevant given the rapidly evolving nature of the region. Existing computational models such as those developed by DWR (Delta Simulation Model 2) and United States Geological Survey (CASCaDE 2; funding support provided, in part, by the DSP) have been instrumental in informing management actions (e.g., temperature plans for the Sacramento River, determining ecosystem effects of the Emergency Drought Barrier on False River). However, with the growing uncertainty associated with climate change, scientists and decision-makers will continue to need such tools that will allow them to be nimble and well-coordinated going forward.

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Further, continued support of established monitoring programs (e.g., IEP and the Delta Regional Monitoring Program/DRMP) that collect continuous, comprehensive, and long-term data sets coupled with robust data management is essential to supporting science-based adaptive management.

Specific priority science actions in need of funding are:

- a) Advancing integrated modeling through efforts such as an open Delta Modeling Collaboratory that promotes the use of models in guiding policy – a concept strongly advocated by the Delta ISB in a 2016 letter to DWR and SWCRB as a means to a “shared, coherent...scientific basis for many important Delta decisions.” The use of existing models to integrate fish and water quality monitoring data to report, simulate, and forecast distribution of salmon runs in time and space would be an example of integrated modeling.
- b) Exploring innovative technologies for scientific monitoring and analysis of flow, water quality, and ecosystem characteristics [e.g., tools for fish monitoring, LiDAR, high-resolution bathymetry (measurement of water depth) technology], new measurements for Delta levee hazards, and citizen science monitoring programs.

Assess the Human Dimensions of Natural Resource Management Decisions. There is a growing recognition that investments in science to understand human responses to management actions, to holistically evaluate value-based tradeoffs among management alternatives, and to assist with balancing limited resources among human and wildlife uses are important for creating durable natural resource management solutions. Humans are inextricably linked with the Delta ecosystem; however, investments that assess the social science (e.g., economics, sociology) aspects of management actions in the Delta have been minimal when compared to the biological and physical sciences.

Investments in science that explore the human dimensions of management actions are especially important in the Delta because the Delta Reform Act states that the coequal goals shall be achieved in a manner that protects the unique cultural, recreational, natural resources, and agricultural values of the Delta as an evolving place (CA Water Code §85054). A 2017 review by the Delta ISB recommends establishing ongoing research on the Delta as an evolving place that is substantial and integrated with Delta research in other areas such as habitat restoration, flow requirements, and water quality.

Specific priority science actions in need of funding are:

- c) Determining the most cost-effective methods to improve species’ habitat on working lands, such as farmland.
- d) Improved understanding of socio-economic adaptations to climate change (e.g., impact of increasing temperatures on regional crop mixes, water pricing, and employment, human behavioral response in the agriculture sector to changes in water prices).

Improve Understanding of Interactions Between Stressors and Managed Species. In the Delta, stressors are factors that negatively affect species and their communities with the most notable impact manifesting in the precipitous decline of native species populations. Prominent stressors include increasing climate variability; increases in temperature; loss of habitat; invasive species; and changes in flow, contaminants, and nutrient concentrations. While the negative role stressors play in the Delta is well acknowledged, it is very difficult to design and implement management actions that holistically address multiple stressors and their impact on species and communities. Research and monitoring focused on single stressors should recognize this complexity and be designed to take into account system-wide impacts, including thresholds, at multiple scales to inform management actions.

It is also important to consider the Delta as a coupled human and natural system while also supporting current regulations that are structured around single species or chemical constituents (e.g., federal and state Endangered Species Acts and the federal Clean Water Act). Existing collaborative research and monitoring groups (e.g., IEP, DRMP) will be instrumental in gathering data and providing a comprehensive overview of the status and trends of stressors to address multiple management questions.

Specific priority science actions in need of funding are:

- e) Conducting studies to better understand the ecosystem response during, and after major changes in the amount and type of effluent (discharge) from large point sources in the Delta including water

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treatment facilities. (Note: A portion of science investigation resources is currently funding research to determine the baseline water and ecosystem conditions in the Delta in advance of the historic upgrade to the Sacramento Regional Sanitation District Plant.)

- f) Identifying areas that act as a refuge for species of concern during extreme conditions (e.g., drought and flood), to inform management decisions and priorities during extreme climate events.
- g) Understanding mechanisms for observed relationships between flows and aquatic species (e.g., salmonid temperature tolerances in streams and rivers).
- h) Evaluating the effects of toxicity (e.g., pharmaceutical products, harmful algal blooms) on aquatic species' survival including possible effects on predation.

Science Infrastructure. In addition to specific priority actions, the SAA identified the broader need for improved science infrastructure in the Delta, which underpins all Delta science. Long-term and sustained support for current infrastructure along with investments in new tools and capacity will guarantee a vibrant Delta science enterprise. Many of the priority science actions identified in this proposal require continued or new investments in the form of physical, computational, virtual, or human infrastructure.

Examples of physical infrastructure needs include:

- *Continuous Real-Time Water Quality Stations* – Real-time telemetered sensor networks for measuring Delta temperature, salinity, pH, turbidity, dissolved oxygen, chlorophyll, nitrate, phosphate, ammonium, and fluorescence
- *Acoustic Telemetry Tags and Receivers* – Networks for tagging and remote tracking of fish in 3D throughout the Delta
- *Tide and Water Level Gauges* for restoration planning, sea-level rise tracking, and environmental monitoring.

Such science infrastructure provides critical tools for informing real-time operations and water quality management. In addition, supporting virtual infrastructure for the open and transparent sharing of water and environmental data increases the capacity for collaborative science synthesis, facilitates innovative ways to share data across agencies and organizations, and sets the stage for developing a federated data sharing system – a single database that is populated by multiple autonomous database systems.

While the examples above require modest one-time investments, the infrastructure would have widespread impacts in moving multiple priority science actions forward.

Delta Science Program: Research Investment in Action

The Science Program currently receives \$4.95 million annually to fund critical science investigations. Of this amount, approximately \$2 million each year supports the development of the next generation of Delta scientists and science policy professionals through two initiatives. First, the Delta Science Fellows Program is a joint venture where pre- and post-doctoral students and Delta agency scientists collaborate on research projects that address high priority science actions relevant to Delta policy and management. Started in 2003, the Science Program and its partners (including U.S. Fish and Wildlife Service (USFWS), NASA Jet Propulsion Laboratory, National Oceanic and Atmospheric Administration (NOAA), and the State and Federal Contractors Water Agency (SFCWA) have funded 86 fellows. Also funded by the DSP are the Delta State Policy Fellows, which are one-year fellowships, where the fellows work full-time with DSC staff on management, policy, and science issues related to its core mission.

The remaining funds go to support a number of targeted, high-priority science ventures. While some DSP research funding is sufficient to fund entire research projects, other projects rely on DSP support as a contributing source of funds that can be used to leverage other resources. For example, as part of the Delta Water Quality and Ecosystem Restoration Grant Program awarded by DFW under Proposition 1, the Science Program collaborated with DFW in its 2016 and 2017 solicitations to fund projects that support pre-restoration monitoring, restoration design synthesis, and real-time decision support tool evaluation (e.g., visualization tools capable of accelerating and coordinating permitting decisions).

The Science Program's ability to advance critical scientific efforts, coupled with its will to explore innovative solutions to complex problems, all through the lens of the best available science, is what makes the Science Program unique and vital to addressing the Delta paradox. Further illustration of the Science Program's role in supporting projects that advance the axiom of "one Delta, one science" include the following examples:

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- *Sacramento Regional Sanitation District's Plant Upgrade (2017)*: The planned upgrades will drastically change the effluent composition from the Plant and have the potential to significantly alter Delta water quality and its ecosystem. Co-funded with USGS and USFWS, this research phase will document current conditions in advance of the upgrade and provide an unprecedented opportunity to better understand the effects of nutrients on algae, aquatic vegetation, and the Delta foodweb.
- *Drought-Management Synthesis: Lessons Learned (2016)*: Identified as a high-impact science action by the DPIIC, this work will evaluate ecological and water supply outcomes of past actions taken in response to, and in preparation for, the drought. Ultimately, this project will identify and promote joint agency science actions that could improve natural resource management and reduce the negative effects of future droughts.
- *Monitoring Juvenile Spring-Run Chinook Salmon in the South Delta (2015)*: The purpose of this project is to collect and interpret data regarding the movement and survival of newly introduced spring-run Chinook salmon in the San Joaquin River. This data will help scientists gauge how hospitable the newly revitalized migration corridor is to the smolts being reintroduced and potentially inform alterations to the San Joaquin River Restoration Program's release strategy.

Impact of Not Receiving Additional Science Resources

With federal funding for Delta science currently limited and bond funding historically focused more on infrastructure projects and less on planning and research, a significant amount of funding to support science-based management decisions in the Delta comes from the Delta Science Program. Absent additional support, the assurance that Delta-related projects are based on best available science, adequately monitored, and adaptively managed as envisioned by the 2009 Delta Reform Act would be potentially compromised. Additionally, the initiation and implementation of the Science Action Agenda would be delayed, hindering the state's ability to be responsive to key management questions and compromising near-term progress towards achieving the coequal goals.

Adaptive Management Liaisons

Adaptive management is a decision-making process that emphasizes monitoring and evaluation that lead to continuous improvements in management planning and implementation of a project. Adaptive management is foundational in the Delta Reform Act. In addition to requiring the Delta Plan to include a science-based adaptive management strategy for ecosystem restoration and water management decisions, Water Code Section 85280 created the Delta ISB and tasked the Board with "oversight of the scientific research, monitoring, and assessment programs that support adaptive management..." In carrying-out its oversight role, the Delta ISB conducted a review on improving adaptive management in the Delta and a common theme among its eight recommendations is that while moving adaptive management more into the Delta mainstream remains challenging, the effort is worthwhile and will rely, in part, on the efforts of the DSP and its staff.

The Science Program currently houses 3.0 senior environmental scientist (specialist) positions who provide adaptive management expertise for a variety of programs including those required to carry out the biological opinions that, in part, determine Delta water exports, the SWRCB's flow objectives for the Delta and its tributaries, the Delta water quality standards, and restoration occurring through EcoRestore. In addition, these positions provide early consultation for the adaptive management of covered action projects relating to ecosystem restoration and water management actions in the Delta.

While these positions are permanent, the funding associated with the positions is for a term of three years, which is set to expire at the end of FY 17/18. The absence of sustained funding for the three liaisons would have two consequences. A lack of funding would compromise attempts to adaptively manage Delta water operations and habitat restoration and impact the integrated, systemwide approach across projects necessary to achieve the coequal goals. Moreover, a loss of such staffing expertise would impact the DSP's ability to provide independent scientific peer review that contributes to best available science for decision-making and to identify and address information gaps across multiple Delta agencies.

Senior Attorney IV

The Council's current legal workload, coupled with the increased contract and grant output as a result of the requested science funding increase, requires additional legal assistance in the form of 1.0 Attorney IV. A senior-level attorney is necessary to perform this work at a high-level of skill and independence. This attorney will also need knowledge and experience in environmental finance, contract negotiation, Administrative Procedure Act compliance (including experience in regulation promulgation), CEQA, state contracting law, and

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Bagley-Keene Act compliance. In addition, as the Council grows, this attorney would provide the Council on-going support and advice in general matters of employment law and Public Record Act compliance.

The Council's existing two attorneys are at full capacity, handling all general, environmental, and administrative law matters for the Council, including:

- Delta Plan litigation (merits appeals, CEQA and attorneys' fees litigation in seven coordinated cases with 26 litigants).
- High-Priority Delta Plan amendments, including Administrative Procedure Act (APA) and CEQA compliance and anticipated litigation.
- Preparation for California WaterFix certificate of consistency filing, potential adjudicative appeals, and any potential litigation.
- The Council's statutorily-mandated 2018 five-year review of the Delta Plan (see Water Code section 85300), anticipated amendments to the Delta Plan emanating from that review, APA and CEQA compliance, and any potential litigation.
- Public meeting/hearing support for Council and staff (i.e., Bagley-Keene, CEQA and APA compliance).
- Legal advisors to Councilmembers, Independent Science Board members and staff in matters of Water Code (specifically, Delta Reform Act), CEQA and APA compliance, as well as matters of general state law, including contract, employment, Public Record Act and Bagley-Keene Act compliance.

As outlined above, the Council's current internal legal staff is at full capacity and this workload is anticipated to substantially increase in the coming fiscal year as priority Delta Plan amendments complete environmental review, substantial projects certify consistency with the Delta Plan, and Delta Plan litigation enters its fifth year. Absent additional, permanent legal personnel assistance, the Council's internal legal capacity could be exhausted, thereby increasing the organization's legal liability.

E. Outcomes and Accountability

The resources requested under this proposal would go towards supporting improved decision-making in the Delta and as such, the coequal goals of the Delta Reform Act and the implementation of the Delta Plan.

The Delta Reform Act requires the Delta Plan to include performance measures that enable the Council to track progress in meeting its objectives. These performance measures include quantitative or other "measurable assessments of the status and trends" of the health of the Delta, as well as the reliability of the state's water supply exported from the Sacramento and San Joaquin river watersheds (Water Code sections 85211 and 85308). In compliance with the Act, the Council's Delta Plan includes a total of 160 performance measures. Measures are in three types: Administrative performance measures (118) are used to track various actions recommended by the Delta Plan; output performance measures (21) are used to track results of administrative actions; and outcome measures (21) are included for tracking the impacts of those actions. These performance measures, coupled with a reporting system developed by the Council in FY 14/15 to track Delta-related activities and projects, provide a sound foundation for the Council to ensure that all resources received are utilized responsibly and effectively. Ultimately, progress toward the Delta Plan's objectives would continue to be reported in the Council's annual reports, which are posted on the Council's website.

The projected workload and outcomes will be consistent with the mandates outlined in the Delta Reform Act and California Water Action Plan, as previously described.

Various controls and means to account for, and monitor progress, are in place to ensure the appropriate use of the requested resources. Progress on outcomes are reported regularly to the Council via monthly staff reports, annual work plans and regular status reports, and periodic public reports on the status of the Delta and the implementation of the Delta Plan and Delta Science Plan.

F. Analysis of All Feasible Alternatives

Alternative 1. Approve the proposal as requested.

Pros: Approval of this proposal would provide greater certainty that investments in water infrastructure, as well as maintenance and operations of managed habitats for key species of concern and ecosystem restoration

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actions meet expected outcomes. Moreover, approval would solidify the scientific foundation for a number of water and ecosystem decisions in the Delta, while advancing adaptive management through the assurance of best available science.

Cons: Under this alternative there would be an impact to the General Fund and the Environmental License Plate Fund, which affects available funding for other priority issue areas.

Alternative 2. Deny the proposal and maintain current resource levels.

Pros. Reduces demand on General Fund and the Environmental License Plate Fund, making those resources available for high-priority needs in other programs.

Cons. Reduced scientific and technical support for Delta management and coequal goals.

G. Implementation Plan

Given that the requested support for DSP resources would supplement existing grant, contract, and personnel activities, substantive modifications to the funding process would not be necessary if this proposal were to be approved.

H. Supplemental Information

None.

I. Recommendation

The Council recommends approval of Alternative 1, approving the proposal as requested. Science-based adaptive management is critical to ensuring that the Delta Plan remains an effective and relevant document upon which decision-making in the Delta is reliant.

BCP Fiscal Detail Sheet

BCP Title: Critical Delta Science Investigation Enhancement

BR Name: 3885-001-BCP-2018-GB

Budget Request Summary

	FY18					
	CY	BY	BY+1	BY+2	BY+3	BY+4
Personal Services						
Positions - Permanent	0.0	1.0	1.0	1.0	1.0	1.0
Total Positions	0.0	1.0	1.0	1.0	1.0	1.0
Salaries and Wages						
Earnings - Permanent	0	375	375	375	375	375
Total Salaries and Wages	\$0	\$375	\$375	\$375	\$375	\$375
Total Staff Benefits	0	102	102	102	102	102
Total Personal Services	\$0	\$477	\$477	\$477	\$477	\$477
Operating Expenses and Equipment						
5340 - Consulting and Professional Services - External	0	2,000	0	0	0	0
Total Operating Expenses and Equipment	\$0	\$2,000	\$0	\$0	\$0	\$0
Total Budget Request	\$0	\$2,477	\$477	\$477	\$477	\$477

Fund Summary

Fund Source - State Operations						
0001 - General Fund	0	477	477	477	477	477
0140 - California Environmental License Plate Fund	0	2,000	0	0	0	0
Total State Operations Expenditures	\$0	\$2,477	\$477	\$477	\$477	\$477
Total All Funds	\$0	\$2,477	\$477	\$477	\$477	\$477

Program Summary

Program Funding						
3370 - Delta Stewardship Council	0	2,477	477	477	477	477
Total All Programs	\$0	\$2,477	\$477	\$477	\$477	\$477

Personal Services Details

Salary Information			CY	BY	BY+1	BY+2	BY+3	BY+4
Positions	Min	Mid						
5780 - Atty IV			0.0	1.0	1.0	1.0	1.0	1.0
VR00 - Various			0.0	0.0	0.0	0.0	0.0	0.0
Total Positions			0.0	1.0	1.0	1.0	1.0	1.0
Salaries and Wages	CY	BY	BY+1	BY+2	BY+3	BY+4		
5780 - Atty IV	0	130	130	130	130	130		
VR00 - Various	0	245	245	245	245	245		
Total Salaries and Wages	\$0	\$375	\$375	\$375	\$375	\$375		
Staff Benefits								
5150900 - Staff Benefits - Other	0	102	102	102	102	102		
Total Staff Benefits	\$0	\$102	\$102	\$102	\$102	\$102		
Total Personal Services	\$0	\$477	\$477	\$477	\$477	\$477		